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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/821,161	04/07/2004	Paul F. Meier	33965US1	9187

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EXAMINER

DOUGLAS, JOHN CHRISTOPHER

ART UNIT	PAPER NUMBER
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1764

DATE MAILED: 06/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/821,161	Applicant(s) MEIER ET AL.	
	Examiner John C. Douglas	Art Unit 1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) 21-34 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-34 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>4/7/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I, claims 1-20 in the reply filed on 3/27/2006 is acknowledged. The traversal is on the ground(s) that the apparatus and process are closely related and that the fields of search are the same. This is not found persuasive because according to MPEP § 806.05(e), "Process and apparatus for its practice can be shown to be distinct inventions, if ... the apparatus as claimed can be used to practice another materially different process". In this case, the apparatus as claimed can be used to practice the materially different process of retorting shale oil.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-12 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lefers (US 5453254) in view of Khare (US 5914292).

6. With respect to claim 1, Lefers discloses a process for of solid-gas contacting comprising introducing a gas in a vertical vessel that comprises a series of horizontal grids and where the vessel becomes wider at the top (see Lefers, column 4, lines 14-23 and Figure 1). Also, Lefers discloses that solid particles are introduced at the bottom of the vessel and that a floating bed of particles is formed when the gas feed flows upwardly making contact with the solid particles (see Lefers, column 4, lines 28-35 and Figure 1).

Lefers does not disclose where the gaseous feed contains a sulfur-containing hydrocarbon and Lefers does not disclose transferring sulfur from the hydrocarbon to the fluidized sorbent particles.

However, Khare discloses circulating a sorbent material with a stream containing sulfur and to remove sulfur from the fluid stream (see Khare, column 3, lines 11-16).

Khare discloses that the removal of sulfur can be necessary to meet sulfur emission requirements (see Khare, column 1, lines 23-27).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the process of Lefers to include circulating a sorbent material with a stream containing sulfur and to remove sulfur from the fluid stream in order for a hydrocarbon to sulfur emission requirements.

7. With respect to claim 2, Khare discloses where the solid sorbent particles have a mean particle size from about 20 to about 500 micrometers (see Khare, column 2, lines 63-67).

8. With respect to claim 3, Khare discloses where the velocity of the fluidization gas is in the range of from about 0.15 ft/s to about 20 ft/s (see Khare, column 11, lines 49-60).

9. With respect to claim 4, Khare discloses where the particles have a mean particle size from about 20 to about 500 micrometers (see Khare, column 2, lines 63-67) and where the particles have a bulk density of about 0.9 to 1.01 (see Khare, column 14, Table 1). According to Applicant's specification, particles with the above size and density qualify the solid sorbent particles as a Group A under the Geldart group classification system (see Specification page 12, lines 1-9).

10. With respect to claim 5, Lefers discloses that the floating bed is present above the sorbent inlet (see Lefers, column 4, lines 35-47 and Figure 1).

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11. With respect to claims 6 and 7, Lefers discloses that solid particles are introduced at the bottom of the vessel and that a floating bed of particles is formed when the gas feed flows upwardly making contact with the solid particles (see Lefers, column 4, lines 28-35 and Figure 1).
12. With respect to claims 8 and 9, Lefers discloses where the sorbent is with drawn above the feed inlet and where both the feed inlet and the sorbent withdrawal are below the baffles (see Lefers, column 6, lines 37-63 and Figure 3).
13. With respect to claim 10, Khare discloses where the sorbent contains nickel (see Khare, column 5, lines 25-39).
14. With respect to claim 11, Khare discloses where the sorbent comprises zinc oxide and where the zinc oxide is converted to zinc sulfide to form sulfur loaded particles (see Khare, column 11, line 1).
15. With respect to claim 12, Khare discloses where the sulfur-loaded particles are regenerated with oxygen (see Khare, column 11, lines 1-5 and column 12, lines 52-65).
16. With respect to claim 19, Lefers discloses where the reactor has a height of 2 meters and a width between 10.4 and 26.0 cm, which means the reactor has a height to width ratio between about 7.7:1 and about 20:1 (see Lefers, column 8, lines 28-36) and the grids that help maintain a fluidized bed have a total height of 102 cm, therefore, the height to width ratio of the fluidized bed was between about 4:1 to about 10:1 (see Lefers, column 8, lines 28-36).
17. Claims 13-15 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lefers in view of Khare as applied to claim 12 above, and further in view of Khare

(US 6184176), hereinafter "Khare 2". Lefers in view of Khare disclose everything in claim 12 (see paragraph 15) and Khare discloses where the regenerated catalyst is recycled back to the reactor (see Khare column 13, lines 54-66) and where the sorbent contains a promoter metal component comprising nickel (see Khare, column 5, lines 25-39) but do not disclose where the regenerated sorbent is sent to a reducer where hydrogen reduces the valence of the promoter metal.

However, Khare 2 discloses subjecting a promoter metal to a reduction step where the metal is contacted with hydrogen in order to reduce the valence of the promoter metal (see Khare 2, column 5, lines 59-67).

Khare 2 discloses where the promoter metal having reduced valence permits removal of sulfur from a cracked-gasoline stream or diesel-fuel stream (see Khare 2, column 5, line 65 – column 6, line 3).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the process of Lefers in view of Khare to include subjecting a promoter metal to a reduction step where the metal is contacted with hydrogen in order to reduce the valence of the promoter metal to permit the removal of sulfur from cracked-gasoline or diesel fuel.

18. Claims 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lefers in view of Khare as applied to claim 1 above, and further in view of Walker (US 2931711). Lefers in view of Khare disclose everything in claim 1 (see paragraph 6) and Lefers discloses where the reactor contains grids that each contain a series of parallel

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elongated baffles (see Lefers, column 4, lines 41-54, column 7, lines 12-32 and Figures 1-4).

Lefers in view of Khare do not disclose where the baffles of each grid are not parallel to baffles in other grids and create angles in the range from about 60 to about 120 degrees.

However, Walker discloses a reactor having stacked trays that each have parallel tubes and that the trays can be arranged so that the tubes of other trays are not parallel with other tubes in different trays and form angles between greater than 0 up to about 90 degrees (see Walker, column 3, lines 1-23 and 54-63 and Figures 2-6).

Walker discloses that such a configuration aides in fluidization of a reactor (see Walker, column 1, lines 56-72).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the process of Lefers in view of Khare to include a reactor having stacked trays that each have parallel tubes and that the trays can be arranged so that the tubes of other trays are not parallel with other tubes in different trays and form angles between greater than 0 up to about 90 degrees in order to aide in reactor fluidization.

Conclusion

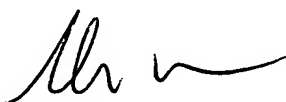
19. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Blanton, Jr. (US 4239742).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John C. Douglas whose telephone number is 571-272-1087. The examiner can normally be reached on 7:30 A.M. to 4:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JCD



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